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CONTAMINATION ASSESSMENT REPORT FOR UNDERGROUND STORAGE TANK 701
(UST 701) CNC CHARLESTON SC
05/22/1998
ENVIRONMENTAL DETACHMENT CHARLESTON

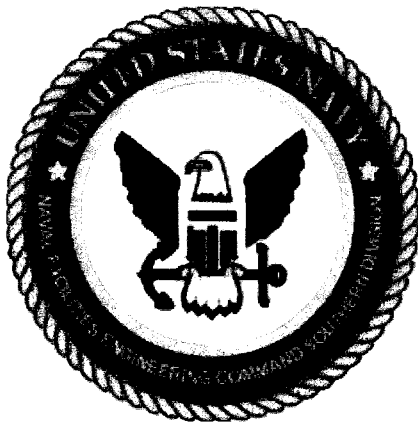


CONTAMINATION ASSESSMENT REPORT

UST 701
(SCDHEC GWPD SITE ID # 17663)
NAVAL BASE CHARLESTON
CHARLESTON SC

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, S.C.



Prepared by:

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S.C. UST SITE REHABILITATION CONTRACTOR # 145



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Executive Summary

Environmental Detachment Charleston (DET) performed a Contamination Assessment (CA) for the Navy at Building 701 at the former Charleston Naval Base (NAVBASE). The CA was performed between 19 March 1998 and 8 April 1998 in response to contamination detected in soil samples taken during removal of an Underground Storage Tank (UST).

The CA field activities included advancing eleven soil borings to the water table to assess the horizontal and vertical extent of potential hydrocarbon contamination in soil at the site and taking four surface soil samples from the area surrounding the former tank location to assess risk to site residents. A soil sample from each soil boring and the surface soil samples were analyzed for Polynuclear Aromatic Hydrocarbons (PAHs) and Benzene, Toluene Ethylbenzene and Xylene plus Naphthalene (BTEX + Naphthalene) Chemicals of Concern (COCs). CA field activities **did not** include activities to characterize groundwater at the site as the laboratory analysis of soil samples taken at the water table failed to detect any COC in excess of groundwater protection Risk Based Screening Levels (RBSLs) (see below).

The results of the CA field investigation indicate no threat exists to groundwater or site residents at the former UST 701 site. No COCs were detected above groundwater protection RBSLs in soil boring samples, and analysis of surface soil samples failed to detect any COC.

Based on the findings of the CA of the former UST 701 site, the Navy recommends no further action for this site

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below the ground surface
BTEX+Naphthalene	Benzene, Toluene Ethylbenzene and Xylene plus Naphthalene
CA	Contamination Assessment
CIA	Controlled Industrial Area
COC	Chemical of Concern
CSAP	RFI Final Comprehensive Sampling and Analysis Plan
DET	Environmental Detachment Charleston
DL	Detection Levels
FID	flame ionization detector
ft/day	feet per day
ft ² /day	square feet per day
gpm	gallons per minute
GWPD	Ground Water Protection Division
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
NAVBASE	former Charleston Naval Base
OVA	organic vapor analyzer
PAH	Polynuclear Aromatic Hydrocarbon
RBC	Risk Based Concentration
RBCA	Risk-Based Corrective Action for Petroleum Releases
RBSL	Risk Based Screening Level
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SAP	Sampling and Analysis Plan
SCAP	Soil Corrective Action Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SDWA	Safe Drinking Water Act
SOUTHDIV	Southern Division Naval Facilities Engineering Command
SSL	Soil Screening Level
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank

1.0 INTRODUCTION

DET removed an UST at Building 701 at the NAVBASE. Soil samples taken during UST removal contained contamination requiring further investigation. Southern Division Naval Facilities Engineering Command (SOUTHDIV) requested the DET to prepare a Sampling and Analysis Plan (SAP) to investigate the site for the U. S. Navy. This Contamination Assessment Report presents the findings and recommendations of the investigation to the South Carolina Department of Health and Environmental Control (SCDHEC) for review and approval.

1.1 PURPOSE. A field investigation was performed between 19 March 1998 and 8 April 1998 at the former UST 701 site to assess the horizontal and vertical extent of soil and groundwater contamination. The purpose of this report is to present the findings of this investigation and provide recommendations for remedial actions to be taken at the UST 701 site.

1.2 SITE DESCRIPTION. The NAVBASE is in the city of North Charleston, on the west bank of the Cooper River in Charleston County, South Carolina. The developed portion of the NAVBASE occupies the west bank of the Cooper River starting at a boundary 2300 feet upstream of Noisette Creek and ending at Shipyard Creek. The northern section of the NAVBASE (Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Zones A, B, C and D) contains a mixture of warehouses, offices and former Navy housing areas. The central section of the NAVBASE (RFI Zones E and F) was occupied primarily by the controlled industrial area (CIA) of the former Naval Shipyard and its associated offices and warehouses. The southern section of the NAVBASE (RFI Zones G, H and I) along the Cooper River is occupied by piers, barracks, training buildings, offices, storehouses and fuel tanks which formerly supported naval vessels homeported at Charleston. The north bank of Shipyard Creek in the southern part of the base is largely undeveloped and consists of recreational areas and a large dredge spoil area.

The former UST 701 site is in RFI Zone B in the northern portion of the NAVBASE. Zone B consists of a golf course and housing area located immediately south of Noisette Creek. Building 701 is a single family dwelling located in the southwest corner of Zone B at 399 Turnbull Avenue. Building 701 is located on the slope of a hill overlooking Turnbull Avenue. The former UST location is fifteen feet from the northwest corner of Building 701.

1.3 SITE BACKGROUND. The UST at Building 701 (SCDHEC Ground Water Protection Division (GWPD) Site Identification No. 17663) was a 280 gallon unregulated heating oil tank installed prior to 1976 and used until April 1996. The tank was constructed of steel and connected to Building 701 by steel piping. There were no recorded releases while the tank was in service.

Between 6 June 1996 and 10 June 1996, the UST and its associated piping were removed. Residual waste oil was pumped into a 55 gallon drum for recycling before the tank was removed. The tank and piping were reported to be in good condition with no visible holes or corrosion when removed. The tank was subsequently cleaned and cut up for recycling as scrap. Excavated soil was returned to the tank pit, after which the top of the excavation was filled to grade with clean fill.

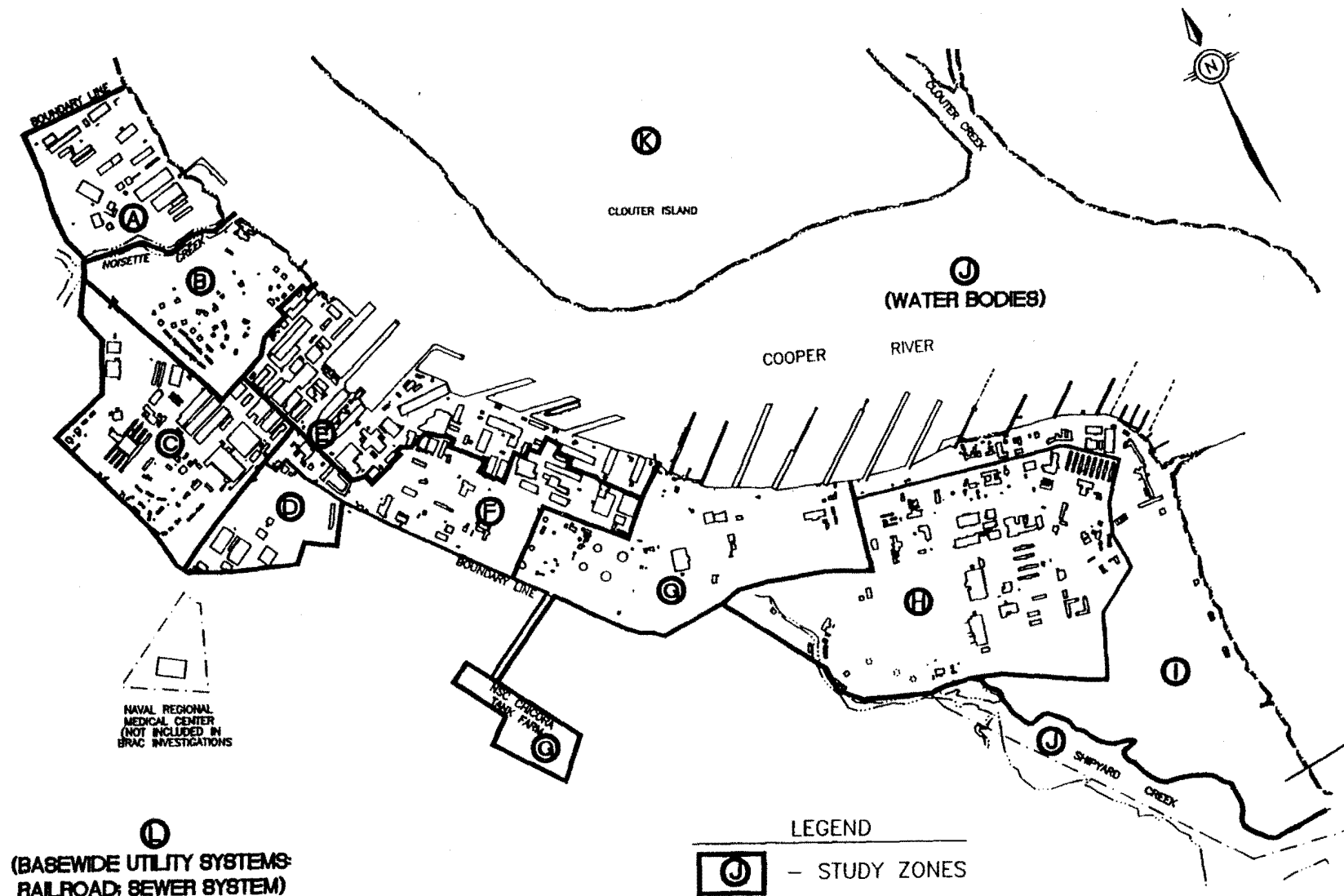
Four soil samples were taken at the base of the excavation before it was filled and analyzed for PAHs and BTEX + Naphthalene. Sample SPORT0072-3 contained concentrations of PAHs in excess of SCDHEC RBSLs. See Figure 1-3.

No groundwater was encountered while removing UST 701.

1.4 SCREENING LEVELS FOR SOIL AND GROUNDWATER Where provided, RBSLs from Appendix B of the SCDHEC Risk-Based Corrective Action for Petroleum Releases (RBCA) dated June 20, 1997 were used in the preparation of this report. For COCs not listed in the RBCA, the screening levels below were used. For COC transfer from soil to groundwater - in accordance with SCDHEC correspondence dated September 2, 1997 (Paul Bristol to J. T. Amey), groundwater protection Soil Screening Levels (SSLs) from the Soil Corrective Action Plan (SCAP) dated January 28, 1997 were used for COCs not listed in Table B3 of the RBCA. For ingestion of or dermal contact with surface soil at residential sites - residential soil ingestion Risk Based Concentrations (RBCs) from the United States Environmental Protection Agency (USEPA) Region III RBC Table dated September 23, 1996 were used as screening levels for COCs not listed in Table B6 of the RBCA. For Groundwater, COCs not listed in Table B1 of the RBCA, Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) were used as screening levels for COCs listed in the SDWA, and Tap Water RBCs from the SCAP were used as screening levels for COCs not listed in either the RBCA or SDWA.

1.5 USE OF RFI DATA The NAVBASE is the site of an ongoing RFI; the UST 701 location is in Zone B of the RFI. Data taken as part of the RFI, including geological information, hydrogeological information, well drilling logs and groundwater sampling data was used in the preparation of this report.

1.6 INITIAL ABATEMENT AND INTERIM REMEDIAL ACTION. No initial abatement or interim remedial actions were taken at the UST 701 site.



(BASEWIDE UTILITY SYSTEMS:
RAILROAD; SEWER SYSTEM)

LEGEND

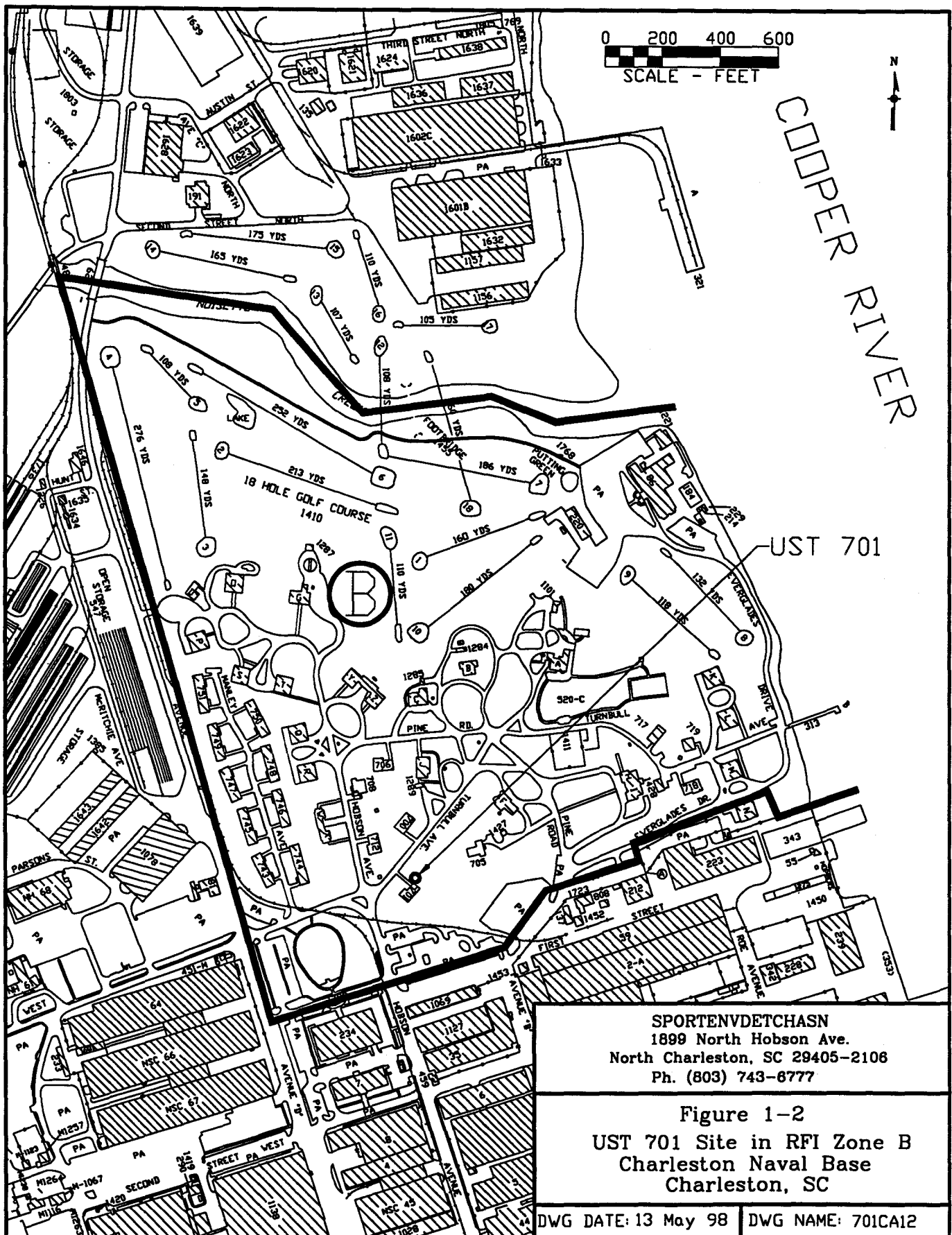
— STUDY ZONES

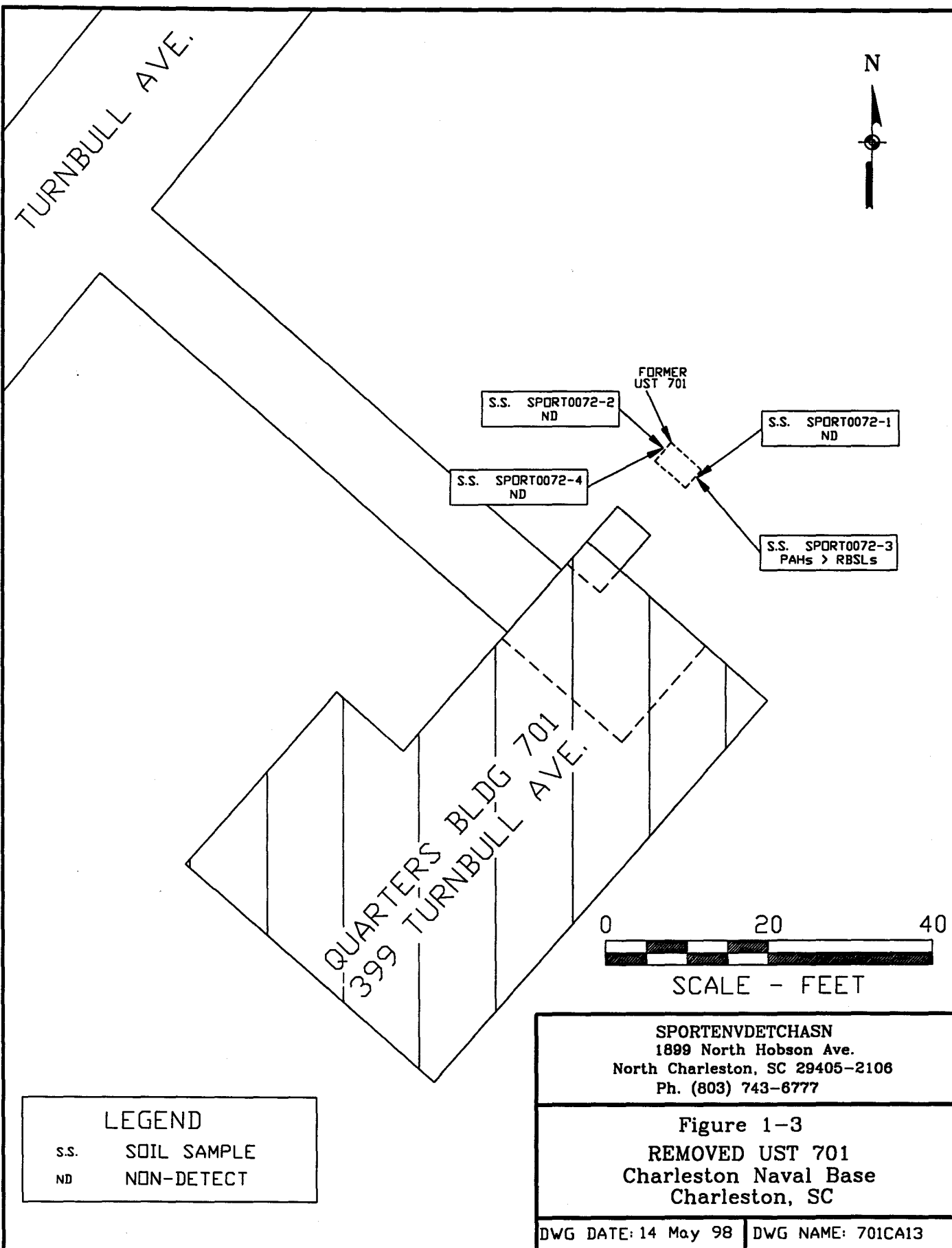
Figure 1-1
RFI Zone Boundaries
Charleston Naval Base
Charleston, SC

SPORTENVDETHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG DATE: 13 May 98

DWG NAME: ALLCA11





2.0 SITE GEOLOGY AND HYDROGEOLOGY

2.1 GEOLOGY. Based on information provided in the Draft Zone I RCRA Facility Investigation Report, NAVBASE Charleston, dated January 1996, Charleston South Carolina is located in the southern Atlantic Coastal Plain. The surficial geology of the region consists of the Quaternary-age sands, silts and clays of the Wando Formation. Below the Wando Formation are the Oligocene-age Ashley Formation and the Eocene-age Parkers Ferry and Harleyville Formations, known collectively as the Cooper Group. Below the Cooper Group is the Eocene-age Santee Limestone.

At the NAVBASE, the upper surface of the Ashley Formation is an erosional surface ranging from 35 feet to 77 feet below the ground surface (bgs). Overlaying the Ashley Formation is the Wando Formation which at the NAVBASE typically consists of upper and lower sand layers divided by a layer of "marsh clay". The surface contours of the NAVBASE area were extensively changed by fill operations during the base's life, particularly in the lower portion of the NAVBASE, which was originally tidal marsh.

2.2 HYDROGEOLOGY.

2.2.1 Regional. (Excerpted from Ensafe/Allen & Hoshall, Draft Zone I RCRA Facility Investigation Report NAVBASE Charleston dated January 1996.) Groundwater occurs under water table or poorly confined conditions within the Pleistocene deposits overlying the Ashley Formation. Transmissivities in the Pleistocene aquifer are generally less than 1,000 square feet per day (ft²/day) and well yield are variable, ranging from 0 to 200 gallons per minute (gpm). This groundwater contains high concentrations of iron and is commonly acidic at shallow depth (Park, 1985).

The Cooper Group is hydrogeologically significant mainly because of its low permeability. In most locales, its sandy, finely granular limestones produce little or no water and act as confining material that produces artesian condition in the underlying Santee Limestone.

2.2.2 Site Specific. From lithologic cross-sections in the Zone B RFI Report dated November 21, 1996, above the Ashley Formation in Zone B are two sand layers divided by a clay layer described as "marsh clay" in the RFI Reports. From the Draft Zone I RCRA Facility Investigation Report, vertical hydraulic conductivity of the Ashley Formation beneath the NAVBASE was measured as 0.0027 feet per day (ft/day) during the Zone H RFI and the vertical hydraulic conductivity of the marsh clay layer was measured as 0.001 ft/day during the Zone I RFI. The Ashley Formation acts as a lower confining layer, while the marsh clay functions as an aquitard separating the upper and lower sand layers. At the NAVBASE, rainwater absorbed into the ground will flow downward to the marsh clay and then flow toward a discharge point into a body of surface water.

The former Building 701 UST site is located approximately 1400 feet from the Cooper River. Based on potentiometric maps included in the final Zone B RFI Report dated November 21, 1996, ground water in the surficial aquifer beneath the former UST location flows in a southeast direction.

2.3 SURFACE HYDROGEOLOGY. Parts of the southern portion of NAVBASE are drained by Shipyard Creek while some northern areas are drained by Noisette Creek. The drainage basins of both waterways include areas other than NAVBASE. These waterways are tributaries of the Cooper River. Surface drainage over the remainder of NAVBASE flows directly into the Cooper River, which discharges into Charleston Harbor. Surface drainage at the former UST 701 site is downhill onto Turnbull Avenue, which carries water to a storm drain emptying into the Cooper River.

3.0 CONTAMINATION ASSESSMENT ACTIVITIES

3.1 SOIL SAMPLE COLLECTION PROGRAMS

3.1.1 Soil Boring Program. A soil boring program was performed at Quarters Building 701 to assess the horizontal and vertical extent of hydrocarbon contamination in the vadose zone at the site. A total of 11 borings were advanced to the water table using stainless steel hand augers. Figure 3-1 shows soil boring locations.

The locations of the soil borings performed differ from those proposed in the Sampling and Analysis Plan - UST NS 701 dated June 26, 1997. The proposed boring locations consisted of a cluster around the location of the high level sample taken during UST removal and a group of samples east of the former UST location in the presumed direction of groundwater flow. Some samples were relocated west (and downhill) of the former UST location to provide samples following the line of surface drainage.

The general technical approach applied to soil borings at the UST 701 site was to collect samples from the underlying soils at 2 foot intervals. Soil samples were screened in the field by performing headspace analysis using an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). No effort was made to evaluate the possible presence of methane by utilizing a charcoal filter. The soil sample from each boring with the greatest ova headspace analysis was submitted to an analytical laboratory to determine the relative concentrations of fuel oil contaminants in the soil. Where all samples from a soil boring had a "zero" headspace analysis, the sample taken at a 6 foot bgs depth (the approximate depth of the base of the removed UST) was submitted for laboratory analysis, with the exception of two samples, one at the source area and one downgradient, which were taken immediately above the water table. Characterization (source area) samples were collected from a boring at the approximate location where contaminants were found during tank removal. Delineation or "clean" borings were made around a perimeter outside the suspected extent of contamination.

The OVA used to monitor soil samples was calibrated daily against a methane standard to ensure that the OVA was functioning properly.

3.1.2 Surface Soil Sampling Program Because of the current and potential future use of this site as residential, a surface soil sampling program was performed at the former UST 701 site to assess risk to site residents. A total of four surface soil samples were collected immediately outside the corners of the tank removal excavation using stainless steel hand augers.

3.1.3 Sampling Equipment Decontamination All soil sampling equipment was decontaminated before and after each use to prevent incidental cross-contamination of the soil samples. Decontamination was performed at the DET decontamination station in the former Charleston Naval Shipyard Building 25. The decontamination procedure consisted of the following steps in order: a wash with a detergent/water solution, a potable water rinse, a deionized water rinse, a rinse with pesticide grade isopropyl alcohol and a second deionized water rinse. Once decontaminated, hand augers were wrapped in aluminum foil to prevent

contamination of the augers before use.

3.2 MONITORING WELL INSTALLATION PROGRAM.

The Sampling and Analysis Plan UST NS 701 dated June 26, 1997 proposed that one temporary monitoring well be installed at the former UST 701 site. However, as the soil boring program of section 3.1.1 failed to detect any COC above groundwater protection RBSLs (see section 4.2 below), no monitoring well installation program was undertaken at the former UST 701 site.

3.3 SAMPLING AND ANALYSIS PROGRAM.

3.3.1 Soil Sampling Program Confirmatory laboratory analyses were performed on soil samples collected from the former UST 701 site to document soil quality at the site. The samples were collected between 19 March 1998 and 8 April 1998.

Characterization (source area) samples were taken at the approximate location where contamination was detected during UST removal. Characterization samples were collected from soil boring NBCT701S01 at a depth of 6 feet bgs and boring NBCT701S15 at a depth of 12 feet bgs immediately above the water table.

Delineation or "clean" samples were collected from nine soil borings NBCT701S02 through NBCT701S10 surrounding the former tank location. Samples NBCT701S020103 through NBCT701S090103 were collected from 6 feet bgs, approximately level with the base of the removed tank, while sample NBCT701S100105 was collected from 10 feet bgs, immediately above the water table and downgradient from the source area.

Surface soil samples were taken from sampling locations NBCT701S11 through NBCT701S14 immediately outside the corners of the UST excavation.

All soil samples were collected as grab samples. Samples for volatile analysis were immediately packed in appropriate laboratory containers which were then packed on ice to minimize volatilization of the potential contaminants. Samples for semivolatile analysis were immediately packed and set aside to wait headspace analysis. For each soil boring, separate samples for volatile and semivolatile analysis were collected and identified for all depth intervals before OVA headspace analysis was performed. After headspace analysis was performed and the results recorded, the samples from the interval with the greatest headspace analysis were retained, packed on ice, for laboratory analysis, with all other samples being returned to the boring from which they were taken.

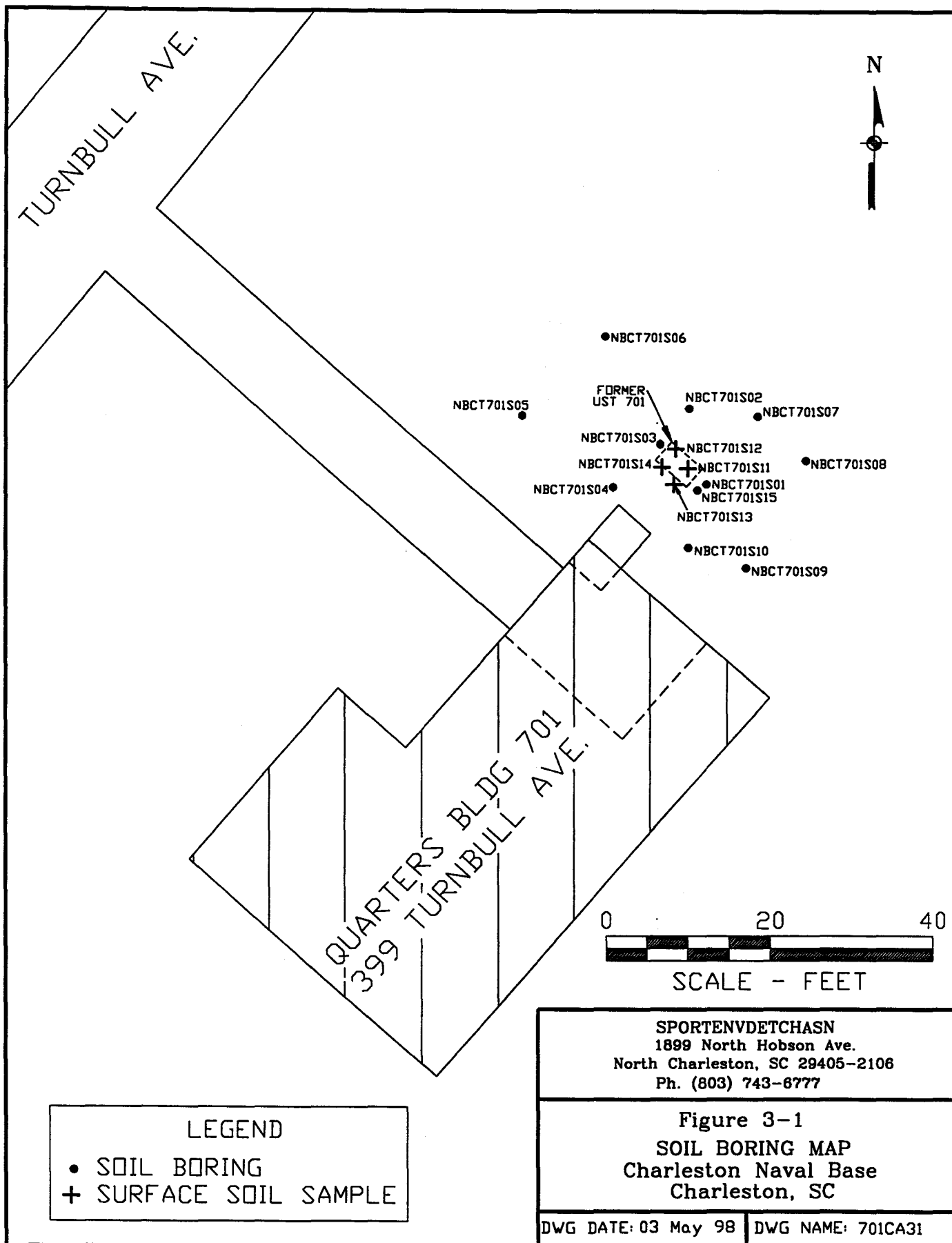
Soil samples were shipped to a SCDHEC-approved laboratory for analysis. Site soil samples were handled and additional Quality Assurance/Quality Control samples prepared as required by the RFI Final Comprehensive Sampling and Analysis Plan (CSAP) dated August 30, 1994. Chain of custody records are contained in Appendix B.

Since the removed UST 701 contained fuel oil, soil samples from the soil boring program were

analyzed for the parameters listed for Diesel or Kerosene in Table 1 of the RBCA. Volatile samples were analyzed for BTEX+Naphthalene; semivolatile samples were analyzed for PAHs. Samples from the surface soil sampling program were analyzed for PAHs only, on the premise that volatile COCs would have evaporated from the sandy soil in the two year interval (April 1996 to March 1998) between UST removal and the sampling program.

Table 3-1
Survey Data for Soil Borings
Quarters Building 701
399 Turnbull Avenue
North Charleston South Carolina

Soil Boring Number	South Carolina State Plane Coordinates		Ground Elevation (ft. msl)
	North	East	
NBCT701S01	377702.81	2316363.13	15.14
NBCT701S02	377712.08	2316361.04	15.43
NBCT701S03	377707.72	2316357.47	15.21
NBCT701S04	377702.42	2316351.67	15.26
NBCT701S05	377711.25	2316340.41	14.19
NBCT701S06	377720.91	2316350.67	14.19
NBCT701S07	377711.13	2316369.35	15.61
NBCT701S08	377705.70	2316375.21	15.57
NBCT701S09	377692.47	2316367.93	14.99
NBCT701S10	377694.96	2316360.90	14.96
NBCT701S11	377704.72	2316360.88	15.09
NBCT701S12	377707.14	2316359.37	15.19
NBCT701S13	377702.76	2316359.12	15.11
NBCT701S14	377704.89	2316357.70	15.22
NBCT701S15	377702.05	2316362.00	15.02



4.0 CONTAMINATION ASSESSMENT FINDINGS

4.1 POTABLE WATER WELL/SENSITIVE RECEPTOR SURVEY. There are no potable water wells on the NAVBASE. The former UST 701 is located more than 1/4 mile inside the NAVBASE boundary, therefore no potable water wells are within a 1/4 mile radius of the UST 701 site. The nearest sensitive receptors are a storm drain catch basin located 120 feet west of the tank site at the corner of Hobson and Turnbull Avenues and a second storm drain catch basin 160 feet north of the tank site in the driveway of 378 Turnbull Avenue. Both catch basins empty to the Cooper River through outfall number 20 as shown in Charleston Naval Shipyard Public Works Drawing H409-72. Surface runoff from the former UST 701 site will most probably drain to the Cooper River through the catch basin at 378 Turnbull Avenue as the curb on the west side of Turnbull Avenue will block drainage to the nearer catch basin.

4.2 SOIL CONTAMINATION.

4.2.1 Soil Vapor Monitoring Results As discussed in Subsection 3.1.1, a total of 11 soil borings were advanced to the water table at the former UST 701 site to help define the horizontal and vertical extent of contamination at the site. The borings were designated NBCT701S01 through NBCT701S10 and NBCT701S15. As the borings were advanced, the soils were screened for hydrocarbon vapors at two foot intervals using an OVA.

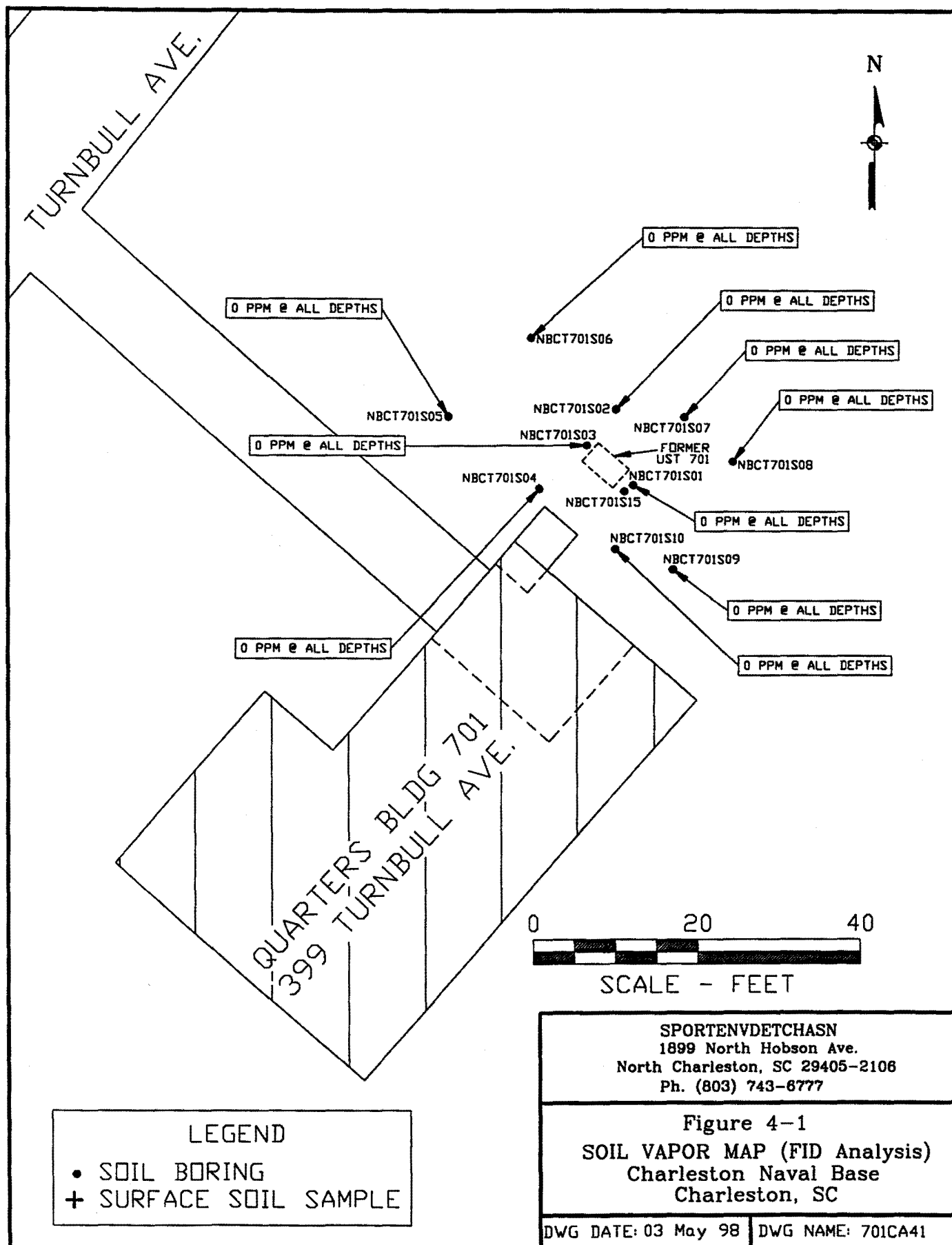
The results of the soil vapor monitoring failed to reveal any evidence of hydrocarbon contamination in soils at the UST 701 site. The OVA detected no contamination in any of the soils screened at UST 701. Figure 4-1 is a soil vapor map of the site showing the boring locations.

4.2.2 Soil Sampling Results

4.2.2.1 Soil Boring Sampling Results Laboratory analysis was performed on a sample from a single depth interval in each of the soil borings NBCT701S01 through NBCT701S10 and NBCT701S15. For borings NBCT701S01 through NBCT701S09, analysis was performed on the samples taken from the 6 foot deep interval (approximately level with the base of the removed tank), while at borings NBCT701S10 and NBCT701S15, soil from the interval immediately above the water table was analyzed. In each case, samples were analyzed for PAHs and BTEX + Naphthalene.

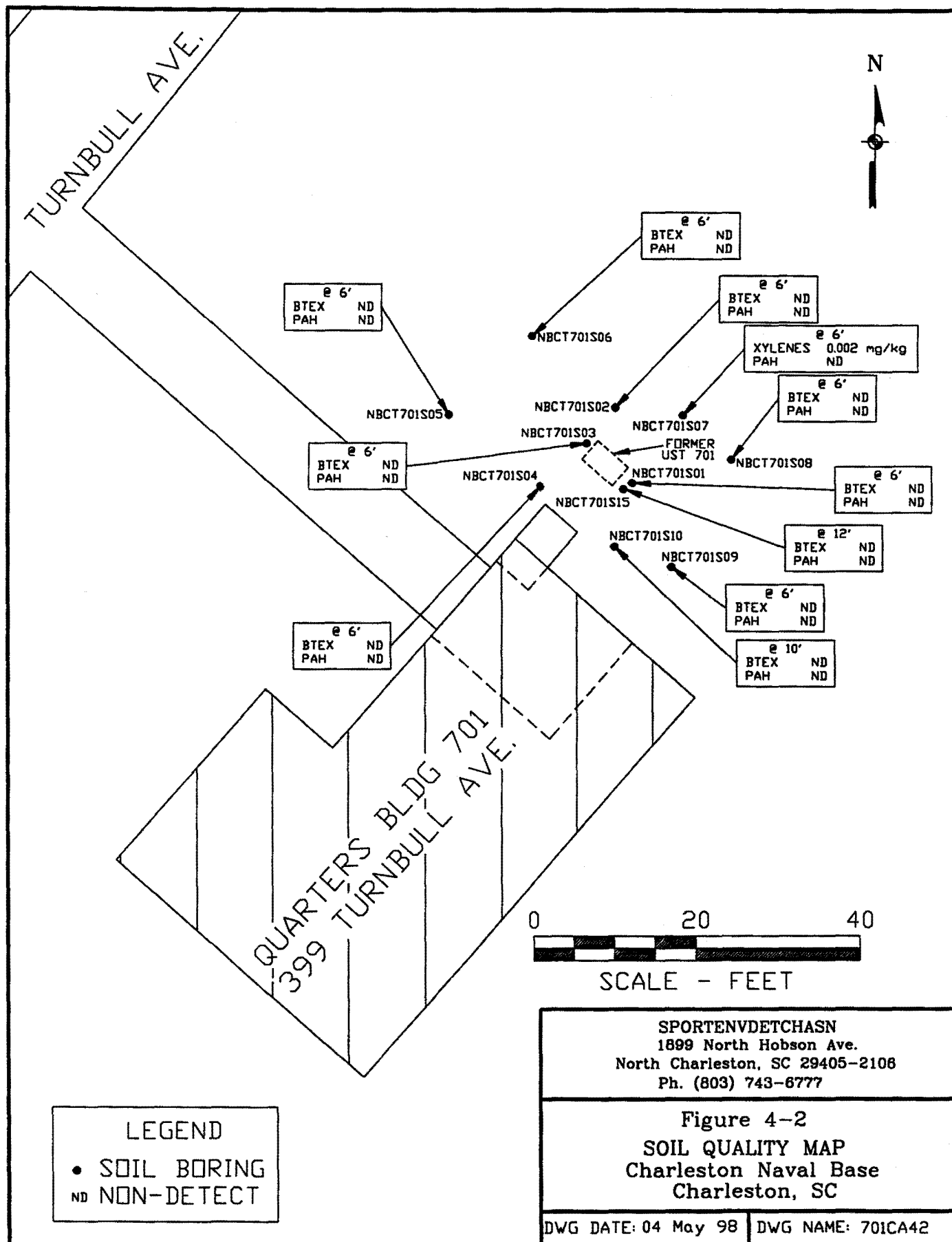
The results of the analysis of soil boring samples are presented in Table 4-1. In only one instance did the analysis detect a COC. Xylene was detected at a concentration of 0.0025 milligrams per kilogram (mg/kg) in the 6 ft deep interval sample taken from soil boring NBCT701S07. This solitary detection is negligible when compared to the groundwater protection RBSL of 44 mg/kg for Xylene in sandy soil. Figure 4-2 illustrates the analytical results for soil boring samples. Copies of the analytical reports are contained in Appendix C.

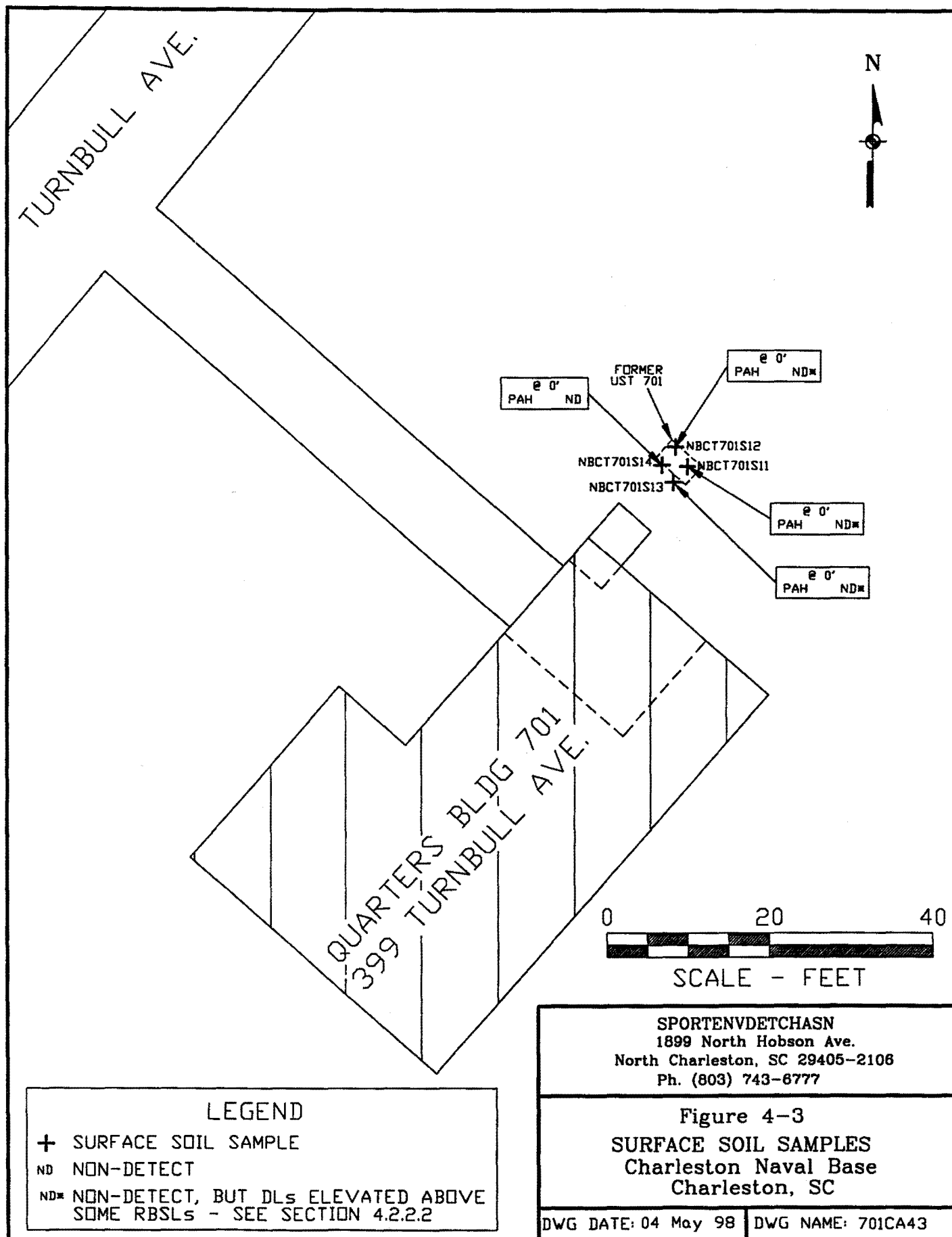
4.2.2.2 Surface Soil Sampling Results Laboratory analysis was performed on four surface soil samples taken the soil surrounding the UST excavation. The results of the analysis are presented in Table 4-2. No COC was detected in any of the surface soil samples. However, surface soil samples NBCT701S110101, NBCT701S120101 and NBCT701S130101 contained matrix interferences which raised Detection Levels (DLs) for PAHs to 0.662-0.666 mg/kg, which exceeds the SCDHEC Residential Ingestion/Dermal Contact RBSL for Dibenzo(ah)anthracene and the residential soil ingestion RBC for Benzo(a)pyrene (both 0.088mg/kg). Figure 4-3 illustrates the analytical results for surface soil samples. Copies of the analytical reports are contained in Appendix C.



LEGEND

- SOIL BORING
- + SURFACE SOIL SAMPLE





LEGEND

+ SURFACE SOIL SAMPLE

ND NON-DETECT

ND* NON-DETECT, BUT DLs ELEVATED ABOVE
SOME RBSLs - SEE SECTION 4.2.2.2

Table 4-1 Analytical Results for Soil Samples
Former UST 701 Site
399 Turnbull Avenue, North Charleston SC

SAMPLE NUMBER	NBCT701S010103	NBCT701S020103	NBCT701S030103	NBCT701S040103	NBCT701S050103
Associated Trip Blank	SPORT0625-1	SPORT0625-1	SPORT0625-1	SPORT0625-1	SPORT0625-1

ANALYTE:	RBSLs					
Benzene	0.007 mg/kg	ND	ND	ND	ND	ND
Ethylbenzene	1.50 mg/kg	ND	ND	ND	ND	ND
Toluene	1.70 mg/kg	ND	ND	ND	ND	ND
Xylenes (total)	44.0 mg/kg	ND	ND	ND	ND	ND
Naphthalene	0.200 mg/kg	ND	ND	ND	ND	ND
Acenaphthene	20.0 mg/kg	ND	ND	ND	ND	ND
Acenaphthylene	20.0 mg/kg	ND	ND	ND	ND	ND
Anthracene	430. mg/kg	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.700 mg/kg	ND	ND	ND	ND	ND
Benzo(a)pyrene	4.00 mg/kg	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.660 mg/kg	ND	ND	ND	ND	ND
Benzo(ghi)perylene	98.0 mg/kg	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	4.60 mg/kg	ND	ND	ND	ND	ND
Chrysene	0.660 mg/kg	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	2.60 mg/kg	ND	ND	ND	ND	ND
Fluoranthene	98.0 mg/kg	ND	ND	ND	ND	ND
Fluorene	16.0 mg/kg	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	35.0 mg/kg	ND	ND	ND	ND	ND
Naphthalene	0.200 mg/kg	ND	ND	ND	ND	ND
Phenanthrene	98.0 mg/kg	ND	ND	ND	ND	ND
Pyrene	140. mg/kg	ND	ND	ND	ND	ND

ND - Non-Detect
mg/kg - milligrams per kilogram

Table 4-1 Analytical Results for Soil Samples
Former UST 701 Site
399 Turnbull Avenue, North Charleston SC

SAMPLE NUMBER	NBCT701S060103	NBCT701S070103	NBCT701S080103	NBCT701S090103	NBCT701S100105
Associated Trip Blank	SPORT0625-1	SPORT0628-1	SPORT0628-1	SPORT0628-1	SPORT0628-1

ANALYTE:	RBSLs					
Benzene	0.007 mg/kg	ND	ND	ND	ND	ND
Ethylbenzene	1.50 mg/kg	ND	ND	ND	ND	ND
Toluene	1.70 mg/kg	ND	ND	ND	ND	ND
Xylenes (total)	44.0 mg/kg	ND	0.002 mg/kg	ND	ND	ND
Naphthalene	0.200 mg/kg	ND	ND	ND	ND	ND
Acenaphthene	20.0 mg/kg	ND	ND	ND	ND	ND
Acenaphthylene	20.0 mg/kg	ND	ND	ND	ND	ND
Anthracene	430. mg/kg	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.700 mg/kg	ND	ND	ND	ND	ND
Benzo(a)pyrene	4.00 mg/kg	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.660 mg/kg	ND	ND	ND	ND	ND
Benzo(ghi)perylene	98.0 mg/kg	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	4.60 mg/kg	ND	ND	ND	ND	ND
Chrysene	0.660 mg/kg	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	2.60 mg/kg	ND	ND	ND	ND	ND
Fluoranthene	98.0 mg/kg	ND	ND	ND	ND	ND
Fluorene	16.0 mg/kg	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	35.0 mg/kg	ND	ND	ND	ND	ND
Naphthalene	0.200 mg/kg	ND	ND	ND	ND	ND
Phenanthrene	98.0 mg/kg	ND	ND	ND	ND	ND
Pyrene	140. mg/kg	ND	ND	ND	ND	ND

ND - Non-Detect
mg/kg - milligrams per kilogram

Table 4-1 Analytical Results for Soil Samples
Former UST 701 Site
399 Turnbull Avenue, North Charleston SC

SAMPLE NUMBER	NBCT701S150106
Associated Trip Blank	SPORT0649-1

ANALYTE:	RBSLs	
Benzene	0.007 mg/kg	ND
Ethylbenzene	1.50 mg/kg	ND
Toluene	1.70 mg/kg	ND
Xylenes (total)	44.0 mg/kg	ND
Naphthalene	0.200 mg/kg	ND
Acenaphthene	20.0 mg/kg	ND
Acenaphthylene	20.0 mg/kg	ND
Anthracene	430. mg/kg	ND
Benzo(a)anthracene	0.700 mg/kg	ND
Benzo(a)pyrene	4.00 mg/kg	ND
Benzo(b)fluoranthene	0.660 mg/kg	ND
Benzo(ghi)perylene	98.0 mg/kg	ND
Benzo(k)fluoranthene	4.60 mg/kg	ND
Chrysene	0.660 mg/kg	ND
Dibenzo(a,h)anthracene	2.60 mg/kg	ND
Fluoranthene	98.0 mg/kg	ND
Fluorene	16.0 mg/kg	ND
Indeno(1,2,3-c,d)pyrene	35.0 mg/kg	ND
Naphthalene	0.200 mg/kg	ND
Phenanthrene	98.0 mg/kg	ND
Pyrene	140. mg/kg	ND

ND - Non-Detect
mg/kg - milligrams per kilogram

Table 4-2 Analytical Results for Surface Soil Samples
Former UST 701 Site
399 Turnbull Avenue, North Charleston SC

SAMPLE NUMBER	NBCT701S110101	NBCT702S120101	NBCT701S130101	NBCT701S140101
Associated Trip Blank	SPORT0628-1	SPORT0628-1	SPORT0628-1	SPORT0628-1

ANALYTE:

RBSLs

Acenaphthene	4700 mg/kg	ND	ND	ND	ND
Acenaphthylene	4700 mg/kg	ND	ND	ND	ND
Anthracene	23000 mg/kg	ND	ND	ND	ND
Benzo(a)anthracene	0.880 mg/kg	ND	ND	ND	ND
Benzo(a)pyrene	0.088 mg/kg	ND	ND	ND	ND
Benzo(b)fluoranthene	0.880 mg/kg	ND	ND	ND	ND
Benzo(ghi)perylene	3100 mg/kg	ND	ND	ND	ND
Benzo(k)fluoranthene	8.80 mg/kg	ND	ND	ND	ND
Chrysene	88.0 mg/kg	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.088 mg/kg	ND	ND	ND	ND
Fluoranthene	3100 mg/kg	ND	ND	ND	ND
Fluorene	3100 mg/kg	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	0.880 mg/kg	ND	ND	ND	ND
Naphthalene	3100 mg/kg	ND	ND	ND	ND
Phenanthrene	3100 mg/kg	ND	ND	ND	ND
Pyrene	2300 mg/kg	ND	ND	ND	ND

ND - Non-Detect

Shaded Areas - DL exceeds soil ingestion/dermal contact RBSL or RBC

5.0 CONTAMINATION ASSESSMENT CONCLUSIONS

The contamination assessment of the former UST 701 site failed to detect contamination above SCDHEC RBSLs. Three of four surface soil samples had DLs elevated above RBSLs. The following paragraphs summarize the conclusions of this contamination assessment investigation.

- No COCs were detected above groundwater protection RBSLs. Analysis of soil samples taken from borings made at the approximate location where COCs were found during UST removal failed to detect any COC either at the level of the tank base or the water table. Based on these results, the former UST 701 site is not a threat to groundwater quality.
- Groundwater was not characterized at the former UST 701 site because no COC was detected at the site in excess of groundwater protection RBSLs, making the likelihood of groundwater contamination negligible.
- Analysis of surface soil samples failed to detect any COC. Three of four samples had DLs elevated above residential ingestion/dermal contact RBSLs for Dibenzo(ah)anthracene and the residential soil ingestion RBC for Benzo(a)pyrene. However, detection of Dibenzo(ah)anthracene at the NAVBASE has been extremely rare. Benzo(a)pyrene, while fairly common at the NAVBASE, is usually accompanied by other COCs, particularly Pyrene and Phenanthrene, at higher concentrations. With no PAH detected in any surface soil sample, the possibility that Dibenzo(ah)anthracene or Benzo(a)pyrene is present in surface soils at the former UST 701 site is negligible. Surface soils at the former UST 701 site are not a threat to site residents.

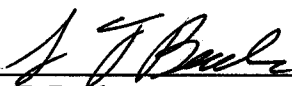
6.0 RECOMMENDATIONS

Based on the findings of the Contamination Assessment of the former UST 701 site, the Navy recommends no further action for this site.

7.0 PROFESSIONAL REVIEW CERTIFICATION


The contamination assessment contained in this report was prepared using sound engineering principles and judgment. This assessment is based on the field investigation and associated information detailed in text and appended to this report. If conditions are determined to exist that differ from those described the undersigned engineers should be notified to evaluate the effects of any additional information on the assessment described in this report. This Contamination Assessment was developed for the former UST site located at Quarters Building 708, 1468 Hobson Avenue, North Charleston SC and applies only to that site:

PREPARER:



S. T. Beale
Project Engineer

REVIEWER:



C. F. Miltzer PE
P. E. South Carolina No. 17638

5-26-98

Date

REFERENCES

Charleston Naval Shipyard Public Works Drawing H409-72 "Storm Drainage - Area No. 2" dated April 3, 1975

Ensafe/Allen & Hoshall, Final Comprehensive Sampling and Analysis Plan (CSAP) RCRA Facility Investigation dated August 30, 1994

Ensafe/Allen & Hoshall, Final RFI Report CTO-0029, Zone B dated November 21, 1996

Ensafe/Allen & Hoshall, Draft Zone I RCRA Facility Investigation Report NAVBASE Charleston dated January 1996

Ensafe/Allen & Hoshall, Final RCRA Facility Investigation Report for Zone H Naval Base Charleston dated July 5, 1996

SCDHEC Underground Storage Tank Assessment Guidelines for Permanent Closure, Change-in Owner and Change-in-Service dated June 1995

SCDHEC Risk-Based Corrective Action for Petroleum Releases dated June 20, 1997

SCDHEC letter dated September 2, 1997, (Paul Bristol to J. T. Amey) "Re: Soil Corrective Action Plan/Response to Comments dated July 30, 1997"

South Carolina R. 61-71 South Carolina Well Regulations and Standards

South Carolina R61-58.5 Maximum Contaminant Levels in Drinking Water

Base Realignment and Closure Tank Management Plan Charleston Naval Complex, Charleston SC

Soil Corrective Action Plan for Excavated Soil from Underground Storage Tanks (Bioremediation Study) Naval Base Charleston, Charleston SC dated January 28, 1997.

Underground Storage Tank Assessment (UST) Assessment Report for Charleston Naval Base Complex, NS 701, Dated 30 September 1996

United States Environmental Protection Agency (USEPA) Environmental Services Division *Standard Operating Procedures and Quality Assurance Manual (SOPQAM)*

United States Environmental Protection Agency (USEPA) Region III RBC Table dated September 23, 1996

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG						JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
LOCATION OF BORING: QUARTERS BUILDING 701 399 TURNBULL AVENUE NORTH CHARLESTON SC 29405						DRILLING METHOD: HAND AUGER		BORING NO 701S01	
						SAMPLING METHOD: GRAB		SHEET 1 OF 1	
								BORING	
NORTHING: 377702.81		EASTING: 2316363.13		WATER LEVEL 12' BGS		START TIME 1030		FINISH TIME 1145	
ELEVATION: 15.14 ft. msl				DATE 19-Mar-98		DATE 19-Mar-98		DATE 19-Mar-98	
SAMPLER TYPE	IN. DRIVEN IN RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS	
						0			
						1			
					0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR	
						3			
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR	
						5			
HA			1		0.00	6	X	SAND - LIGHT TAN-MEDIUM TAN IN COLOR - NO ODOR	
			3			7	X	SAMPLE NBCT701S010103	
						8		SAND - LIGHT TAN-MEDIUM TAN IN COLOR - NO ODOR	
					0.00	9			
						10		SAND - MEDIUM TAN IN COLOR - NO ODOR	
						11			
					0.00	12		SAND/CLAY - MEDIUM TAN IN COLOR - NO ODOR	
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

BY _____ DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

LOCATION OF BORING: QUARTERS BUILDING 701
399 TURNBULL AVENUE
NORTH CHARLESTON SC 29405

JOB ORDER: T-SAP 701

CLIENT: SOUTH DIV

DRILLING METHOD:

HAND AUGER

BORING NO 701S02

SHEET 1 OF 1

SAMPLING METHOD:

GRAB

BORING

WATER LEVEL

12' BGS

TIME

1435

START

FINISH

TIME

TIME

1300

1435

DATE

19-Mar-98

DATE

DATE

19-Mar-98

19-Mar-98

NORTHING: 377712.08
ELEVATION: 15.43 ft. msl

EASTING: 2316361.04

CASING DEPTH

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS

SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						0		
						1		
					0.00	2		SAND - MEDIUM TAN IN COLOR - NO ODOR
						3		
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR
						5		
HA			1		0.00	6		SAND - MEDIUM TAN IN COLOR - NO ODOR
			3			7		SAMPLE NBCT701S020103
					0.00	8		SAND - MEDIUM TAN IN COLOR - NO ODOR
						9		
					0.00	10		SAND/CLAY - MEDIUM TAN IN COLOR - NO ODOR
						11		
					0.00	12		CLAY - MEDIUM TAN IN COLOR - NO ODOR
						13		
						14		
						15		
						16		
						17		
						18		
						19		
						20		

BY _____
DATE: _____
CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG						JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
LOCATION OF BORING: QUARTERS BUILDING 701 399 TURNBULL AVENUE NORTH CHARLESTON SC 29405						DRILLING METHOD: HAND AUGER		BORING NO 701S03	
						SAMPLING METHOD: GRAB		SHEET 1 OF 1	
								BORING	
NORTHING: 377707.72		EASTING: 2316357.47		WATER LEVEL		11' BGS		START	FINISH
ELEVATION: 15.21 ft. msl				TIME		1010		TIME	TIME
				DATE		20-Mar-98		DATE	DATE
				CASING DEPTH				20-Mar-98	20-Mar-98
SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS	
						0			
						1			
					0.00	2		SAND - LIGHT GRAY TO GRAY IN COLOR - NO ODOR	
						3			
					0.00	4		SAND - LIGHT GRAY IN COLOR - NO ODOR	
						5			
HA			1		0.00	6	X	SAND - LIGHT TAN IN COLOR - NO ODOR	
			3			7		SAMPLE NBCT701S030103	
					0.00	8		SAND - LIGHT TAN IN COLOR - NO ODOR	
						9			
					0.00	10		SAND - MEDIUM TAN IN COLOR - NO ODOR	
					0.00	11		SAND/CLAY - MEDIUM TAN IN COLOR - NO ODOR	
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

BY _____
DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
DRILLING METHOD:		BORING NO 701S04	
HAND AUGER		SHEET 1 OF 1	
SAMPLING METHOD:		BORING	
GRAB		START	FINISH
WATER LEVEL	11' BGS	TIME	TIME
TIME	1114	1025	1114
DATE	20-Mar-98	DATE	DATE
CASING DEPTH		20-Mar-98	20-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 701
399 TURNBULL AVENUE
NORTH CHARLESTON SC 29405

NORTHING: 377702.42 EASTING: 2316351.67
ELEVATION: 15.26 ft. msl

SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
						0		
						1		
					0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR
						3		
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR
						5		
HA			1 3		0.00	6	X	SAND - MEDIUM TAN IN COLOR - NO ODOR SAMPLE NBCT701S040103
						7		
					0.00	8		SAND - MEDIUM TAN IN COLOR - NO ODOR
						9		
					0.00	10		SAND - MEDIUM TAN IN COLOR - NO ODOR
					0.00	11		SAND/CLAY - MEDIUM TAN IN COLOR - NO ODOR
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		
						20		

BY _____
DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 701

CLIENT: SOUTH DIV

DRILLING METHOD:

BORING NO 701S05

HAND AUGER

SHEET 1 OF 1

SAMPLING METHOD:

BORING

GRAB

START

FINISH

WATER LEVEL

10' BGS

TIME

TIME

TIME

1330

1300

1330

DATE

20-Mar-98

DATE

DATE

CASING DEPTH

20-Mar-98

20-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 701
399 TURNBULL AVENUE
NORTH CHARLESTON SC 29405

NORTHING: 377711.25

EASTING: 2316340.41

ELEVATION: 14.19 ft. msl

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS

SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO.	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH
						0	
						1	
					0.00	2	
						3	
					0.00	4	
						5	
HA			1		0.00	6	
			3			7	
					0.00	8	
						9	
					0.00	10	
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						0	

SAND - LIGHT TAN IN COLOR - NO ODOR

SAND - LIGHT TAN IN COLOR - NO ODOR

SAND - LIGHT TO MEDIUM TAN IN COLOR - NO ODOR
SAMPLE NBCT701S050103

SAND - MEDIUM TAN IN COLOR - NO ODOR

SAND - MEDIUM TAN IN COLOR - NO ODOR

BY _____
DATE: _____
CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG						JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
LOCATION OF BORING: QUARTERS BUILDING 701 399 TURNBULL AVENUE NORTH CHARLESTON SC 29405						DRILLING METHOD: HAND AUGER		BORING NO 701S06	
						SAMPLING METHOD: GRAB		SHEET 1 OF 1	
						WATER LEVEL 10' BGS		BORING	
NORTHING: 377720.91						EASTING: 2316350.67		DATE 20-Mar-98	
ELEVATION: 14.19 ft. msl						CASING DEPTH		DATE 20-Mar-98	
								DATE 20-Mar-98	
SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS	
						0			
						1			
					0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR	
						3			
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR	
						5			
HA			1		0.00	6	X	SAND - MEDIUM TAN IN COLOR - NO ODOR	
			3			7	X	SAMPLE NBCT701S060103	
						8		SAND - MEDIUM TAN IN COLOR - NO ODOR	
					0.00	9			
						10		SAND - MEDIUM TAN IN COLOR - NO ODOR - WET	
						1			
						2			
						3			
						4			
						5			
						6			
						7			
						8			
						9			
						0			

BY _____ DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
DRILLING METHOD: HAND AUGER		BORING NO 701S07	
SAMPLING METHOD:		SHEET 1 OF 1	
GRAB		BORING	
WATER LEVEL	11' BGS	START	FINISH
TIME	945	TIME	TIME
DATE	23-Mar-98	DATE	DATE
CASING DEPTH		23-Mar-98	23-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 701
399 TURNBULL AVENUE
NORTH CHARLESTON SC 29405

NORTHING: 377711.13 EASTING: 2316369.35
ELEVATION: 15.61 ft. msl

SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
						0		
						1		
					0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR
						3		
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR
						5		
HA			1 3		0.00	6	X	SAND - LIGHT TO MEDIUM TAN IN COLOR - NO ODOR SAMPLE NBCT701S070103
						7		
					0.00	8		SAND - MEDIUM TAN IN COLOR - NO ODOR
						9		
					0.00	10		SAND - DARK TAN IN COLOR - NO ODOR - WET
					0.00	11		SAND - DARK TAN IN COLOR - NO ODOR
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		
						20		

BY _____ DATE: _____
CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
DRILLING METHOD: HAND AUGER		BORING NO 701S08	
SAMPLING METHOD: GRAB		SHEET 1 OF 1	
		BORING	
		START	FINISH
WATER LEVEL	11' BGS	TIME	TIME
TIME	1050	1005	1050
DATE	23-Mar-98	DATE	DATE
CASING DEPTH		23-Mar-98	23-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 701
399 TURNBULL AVENUE
NORTH CHARLESTON SC 29405

NORTHING: 377705.70 EASTING: 2316375.21
ELEVATION: 15.57 ft. msl

SAMPLER TYPE	IN DRIVEN IN RECOVERED	DEPTH OF CASING	SAMPLE NO.	SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
							0		
							1		
						0.00	2		SAND - LIGHT GRAYISH TAN IN COLOR - NO ODOR
							3		
						0.00	4		SAND - LIGHT GRAYISH TAN IN COLOR - NO ODOR
							5		
HA			1	3		0.00	6	X	SAND - LIGHT GRAYISH TAN IN COLOR - NO ODOR SAMPLE NBCT701S080103
							7		
						0.00	8		SAND - MEDIUM GRAYISH TAN IN COLOR - NO ODOR
							9		
						0.00	10		SAND - MEDIUM TAN IN COLOR - NO ODOR
						0.00	11		SAND/CLAY - MEDIUM-DARK TAN IN COLOR - NO ODOR
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		

BY _____
DATE: _____
CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
DRILLING METHOD: HAND AUGER		BORING NO 701S09	
SAMPLING METHOD: GRAB		SHEET 1 OF 1	
		BORING	
WATER LEVEL	10' BGS	START	FINISH
TIME	1335	TIME	TIME
DATE	23-Mar-98	DATE	DATE
CASING DEPTH		23-Mar-98	23-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 701
399 TURNBULL AVENUE
NORTH CHARLESTON SC 29405

NORTHING: 377692.47 EASTING: 2316367.93
ELEVATION: 14.99 ft. msl

SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO.	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
						0		
						1		
					0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR
						3		
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR
						5		
HA			1		0.00	6	X	SAND - LIGHT TO MEDIUM TAN IN COLOR - NO ODOR SAMPLE NBCT701S090103
			3			7		
					0.00	8		SAND - LIGHT TO MEDIUM TAN IN COLOR - NO ODOR
						9		
					0.00	10		SAND/CLAY - MEDIUM TAN IN COLOR - NO ODOR
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		
						20		

BY _____
DATE: _____
CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG										JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV			
LOCATION OF BORING: QUARTERS BUILDING 701 399 TURNBULL AVENUE NORTH CHARLESTON SC 29405										DRILLING METHOD: HAND AUGER		BORING NO 701S10			
										SAMPLING METHOD: GRAB		SHEET 1 OF 1			
										WATER LEVEL		10' BGS			
NORTHING:		377694.96		EASTING:		2316360.90		DATE		23-Mar-98		DATE		DATE	
ELEVATION:		14.96 ft. msl		CASING DEPTH				23-Mar-98		23-Mar-98		23-Mar-98		23-Mar-98	
SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO.	SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS						
							0								
							1								
						0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR						
							3								
						0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR						
							5								
						0.00	6		SAND - LIGHT TO MEDIUM TAN IN COLOR - NO ODOR						
							7								
						0.00	8		SAND - MEDIUM TAN IN COLOR - NO ODOR						
							9								
HA			1	5		0.00	10		SAND/CLAY - MEDIUM TAN IN COLOR - NO ODOR						
							11		SAMPLE NBCT701S100105						
							12								
							13								
							14								
							15								
							16								
							17								
							18								
							19								
							20								

BY _____
DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

LOCATION OF BORING: QUARTERS BUILDING 701
399 TURNBULL AVENUE
NORTH CHARLESTON SC 29405

JOB ORDER: T-SAP 701

CLIENT: SOUTH DIV

DRILLING METHOD:

HAND AUGER

BORING NO 701S11

SHEET 1 OF 1

SAMPLING METHOD:

BORING

GRAB (SURFACE SOIL)

START

FINISH

WATER LEVEL

N/A

TIME

TIME

TIME

1435

1435

DATE

DATE

DATE

CASING DEPTH

23-Mar-98

23-Mar-98

NORTHING:

377704.72

EASTING:

2316360.88

ELEVATION:

15.09 ft. msl

SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
HA			1		0.00	0		SAND - BLACK IN COLOR - NO ODOR
			1			1		SAMPLE NBCT701S110101
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____
DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG										JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
LOCATION OF BORING: QUARTERS BUILDING 701 399 TURNBULL AVENUE NORTH CHARLESTON SC 29405										DRILLING METHOD: HAND AUGER		BORING NO 701S12	
										SAMPLING METHOD:		SHEET 1 OF 1	
										GRAB (SURFACE SOIL)		BORING	
										WATER LEVEL		START	
										N/A		FINISH	
										TIME		TIME	
										1440		1440	
NORTHING:		377707.14		EASTING:		2316359.37		DATE		DATE			
ELEVATION:		15.19 ft. msl						CASING DEPTH		DATE			
										23-Mar-98			
										23-Mar-98			
SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS					
HA			1		0.00	0		SAND - BLACK IN COLOR - NO ODOR					
			1			1		SAMPLE NBCT701S120101					
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							
						0							

BY _____
DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG								JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
LOCATION OF BORING: QUARTERS BUILDING 701 399 TURNBULL AVENUE NORTH CHARLESTON SC 29405								DRILLING METHOD: HAND AUGER		BORING NO 701S13	
								SAMPLING METHOD: GRAB (SURFACE SOIL)		SHEET 1 OF 1	
								WATER LEVEL		BORING	
								N/A		START	
								TIME		FINISH	
										TIME	
NORTHING:		377702.76		EASTING:		2316359.12		DATE		DATE	
ELEVATION:		15.11 ft. msl						DATE		DATE	
								23-Mar-98		23-Mar-98	
SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS			
HA			1 1		0.00	0	X	SAND - BLACK IN COLOR - NO ODOR			
						1		SAMPLE NBCT701S130101			
						2					
						3					
						4					
						5					
						6					
						7					
						8					
						9					
						0					
						1					
						2					
						3					
						4					
						5					
						6					
						7					
						8					
						9					
						0					

BY _____
DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG							JOB ORDER: T-SAP 701		CLIENT: SOUTH DIV	
LOCATION OF BORING: QUARTERS BUILDING 701 399 TURNBULL AVENUE NORTH CHARLESTON SC 29405							DRILLING METHOD: HAND AUGER		BORING NO 701S14	
							SAMPLING METHOD: GRAB (SURFACE SOIL)		SHEET 1 OF 1	
									BORING	
WATER LEVEL		N/A		START		FINISH				
TIME				TIME		TIME				
1450				1450		1450				
DATE				DATE		DATE				
23-Mar-98				23-Mar-98		23-Mar-98				
NORTHING: 377704.89		EASTING: 2316357.70		CASING DEPTH						
ELEVATION: 15.22 ft. msl										
SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS		
HA			1		0.00	0		SAND - BLACK IN COLOR - NO ODOR		
			1			1		SAMPLE NBCT701S140101		
						2				
						3				
						4				
						5				
						6				
						7				
						8				
						9				
						0				
						1				
						2				
						3				
						4				
						5				
						6				
						7				
						8				
						9				
						0				

BY _____
DATE: _____

CHK BY: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 701

CLIENT: SOUTH DIV

DRILLING METHOD:

HAND AUGER

BORING NO 701S15

SHEET 1 OF 1

SAMPLING METHOD:

GRAB

BORING

START

FINISH

WATER LEVEL

12' BGS

TIME

TIME

TIME

1015

1015

LOCATION OF BORING: QUARTERS BUILDING 701

399 TURNBULL AVENUE

NORTH CHARLESTON SC 29405

NORTHING:

377702.05

EASTING:

2316362.00

DATE

8-Apr-98

DATE

DATE

ELEVATION:

15.02 ft. msl

CASING DEPTH

8-Apr-98

SAMPLER TYPE	IN. DRIVEN IN. RECOVERED	DEPTH OF CASING	SAMPLE NO.	SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
							0		
							1		
							2		
							3		
							4		
							5		
							6		
							7		
							8		
							9		
							10		
							11		
HA			1	6			12	X	TAN MOIST SANDY SOIL - NO ODOR
							13		SAMPLE NBCT701S150106
							14		
							15		
							16		
							17		
							18		
							19		
							20		

BY _____ DATE: _____
CHK BY: _____

CHAIN OF CUSTODY RECORD

1. *Journal of Management Studies*, 1996, 33, 1, 1-14.

[illegible]

White = sample collector Yellow = file Pink = with report

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client Name/Facility Name				SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods																		Use F or P in the boxes to indicate whether sample was filtered and/or preserved	
Collected by/Company				# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	BTEX/NAP	PAH	Remarks	
SAMPLE ID	DATE	TIME	WELL																				SOIL
SPORT 628-1	3/23/98	0820																			X	701-2 Soil TR.P BLANK	
SPORT 628-2	3/23/98	0900																			X	NBCT 701S 070002 103	
SPORT 628-3	3/23/98	1025																			X	NBCT 701S 080103	
SPORT 628-4	3/23/98	1320																			X	NBCT 701S 090103	
SPORT 628-5	3/23/98	1425																			X	NBCT 701S 100105	
SPORT 628-6	3/23/98	1435																			X	NBCT 701S 110101	
SPORT 628-7	3/23/98	1440																			X	NBCT 701S 120101	
SPORT 628-8	3/23/98	1445																			X	NBCT 701S 130101	
SPORT 628-9	3/23/98	1450																			X	NBCT 701S 140101	
Relinquished by: <u>V. J. M...</u>				Date: <u>3/24/98</u>	Time: <u>0840</u>	Received by: <u>Virgil Washington</u>				Relinquished by:				Date:	Time:	Received by:							
Relinquished by:				Date:	Time:	Received by lab by:				Date:	Time:	Remarks:											

White = sample collector Yellow = file Pink = with report

Table C-1
Sample Cross-Reference List
Quarters Building 701
399 Turnbull Avenue
North Charleston South Carolina

DET Laboratory No.	Intermediate No. (where used)	Report Sample Identification No.
SPORT0625-1	SOIL TRIP BLANK	
SPORT0625-2	701-1	NBCT701S010103
SPORT0625-3	701-2	NBCT701S020103
SPORT0625-4	701-3	NBCT701S030103
SPORT0625-5	701-4	NBCT701S040103
SPORT0625-6	701-5	NBCT701S050103
SPORT0625-7	701-6	NBCT701S060103
SPORT0628-1	SOIL TRIP BLANK	
SPORT0628-2		NBCT701S070103
SPORT0628-3		NBCT701S080103
SPORT0628-4		NBCT701S090103
SPORT0628-5		NBCT701S100105
SPORT0628-6		NBCT701S110101
SPORT0628-7		NBCT701S120101
SPORT0628-9		NBCT701S130101
SPORT0628-9		NBCT701S140101
SPORT0641-1	SOIL TRIP BLANK	
SPORT0641-2		NBCT701S150106



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE GEL M EPI
FL ES7156/87294 E17472/87458
NC 213
SC 10120 10582
TN 02934 02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 1 of 2

Sample ID : SPORT0625-1
Lab ID : 9803508-01
Matrix : Soil
Date Collected : 03/19/98
Date Received : 03/20/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/27/98	2203	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					

Surrogate Recovery	Test	Percent%	Acceptable Limits
Bromofluorobenzene	BTEX-8260	86.4	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	86.2	(63.4 - 136.)
Toluene-d8	BTEX-8260	84.6	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.4	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	86.2	(63.4 - 136.)
Toluene-d8	NAP-8260	84.6	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260

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9803508-01

P.002

TEL: 803-852-5812

GEN. ENGINEERING

MAR.-31.98 (TUE) 17:46



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	EE7156/N7294	EE7472/T7458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 2 of 2

Sample ID : SPORT0625-1

M = Method

Method-Description

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Reviewed By

Karen Blakeney

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(803) 556-8171 • Fax (803) 766-1173

9803508-01

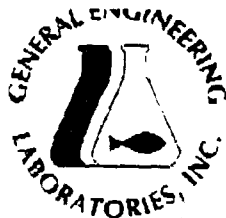


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TEL: 803-852-5812

GEN. ENGINEERING 17:46 (TUE) 31-98 MAR.



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E57156/87294	E57472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 1 of 2

Sample ID : SPORT0625-2
Lab ID : 9803508-02
Matrix : Soil
Date Collected : 03/19/98
Date Received : 03/20/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/27/98	2305	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	JPA	03/25/98	0107	118787	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

RDH 03/23/98 1200 118787 3

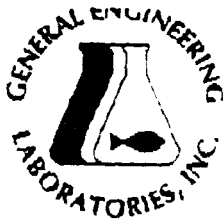
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Laboratory Certifications

STATE	GEL	EPT
FL	ES7154/87294	ES7472/87438
NC	233	
SC	10120	10382
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 2 of 2

Sample ID : SPORT0625-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	75.7	(30.0 - 115.)
Nitrobenzene-d5	M610	77.5	(23.0 - 120.)
p-Terphenyl-d14	M610	85.8	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	86.2	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	86.4	(63.4 - 136.)
Toluene-d8	BTEX-8260	85.2	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.2	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	86.4	(63.4 - 136.)
Toluene-d8	NAP-8260	85.2	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

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9803508-02





GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	CERL	EPI
FL	887156/87284	887472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & version
SUPSHIP-Portsmouth Detach. -Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NFWC00197

Report Date: March 31, 1998

Page 1 of 2

Sample ID : SPORT0625-3
Lab ID : 9803508-03
Matrix : Soil
Date Collected : 03/19/98
Date Received : 03/20/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Butch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0007	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	JPA	03/25/98	0139	118787	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(g,h,i)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

RDH 03/23/98 1200 118787 3

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9803508-03



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TEL: 803-852-5812

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MAR. - 31 98 (TUE) 17:47



GENERAL ENGINEERING LABORATORIES

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Laboratory Certification

STATE	GEL	EPI
FL	ES7156/87294	ES7472/87458
NC	233	
SC	10120	10502
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 2 of 2

Sample ID : SPORT0625-3

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	79.4	(30.0 - 115.)
Nitrobenzene-d5	M610	81.3	(23.0 - 120.)
p-Terphenyl-d14	M610	85.7	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	86.6	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	85.8	(63.4 - 136.)
Toluene-d8	BTEX-8260	83.0	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.6	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	85.8	(63.4 - 136.)
Toluene-d8	NAP-8260	83.0	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

I indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

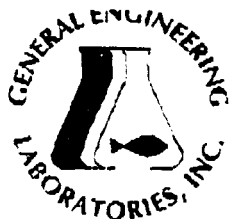
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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 1 of 2

Sample ID : SPORT0625-4
Lab ID : 9803508-04
Matrix : Soil
Date Collected : 03/20/98
Date Received : 03/20/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0039	119097	1
Ethylbenzene	U	0.315	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.807	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	166	331	ug/kg	1.0	JPA	03/25/98	0211	118787	2
Acenaphthylene	U	0.00	166	331	ug/kg	1.0					
Anthracene	U	0.00	166	331	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	166	331	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	166	331	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	166	331	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	166	331	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	166	331	ug/kg	1.0					
Chrysene	U	0.00	166	331	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	166	331	ug/kg	1.0					
Fluoranthene	U	0.00	166	331	ug/kg	1.0					
Fluorene	U	0.00	166	331	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	166	331	ug/kg	1.0					
Naphthalene	U	0.00	166	331	ug/kg	1.0					
Phenanthrene	U	0.00	166	331	ug/kg	1.0					
Pyrene	U	0.00	166	331	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

RDH 03/23/98 1200 118787 3

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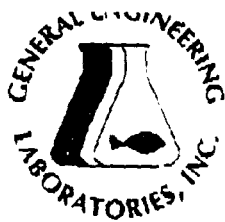
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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 2 of 2

Sample ID		: SPORT0625-4	
Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	88.1	(30.0 - 115.)
Nitrobenzene-d5	M610	89.2	(23.0 - 120.)
p-Terphenyl-d14	M610	92.7	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	87.2	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	90.2	(63.4 - 136.)
Toluene-d8	BTEX-8260	84.4	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	87.2	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	90.2	(63.4 - 136.)
Toluene-d8	NAP-8260	84.4	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 1 of 2

Sample ID : SPORT0625-5
Lab ID : 9803508-05
Matrix : Soil
Date Collected : 03/20/98
Date Received : 03/20/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/30/98	1708	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	IPA	03/25/98	0243	118787	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

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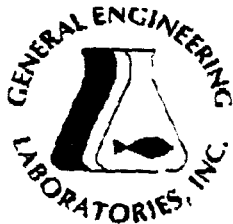
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TN	02934	02934

Client: Supervisor of Ship Building & Conversion
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1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

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Report Date: March 31, 1998

Page 2 of 2

Sample ID : SPORT0625-5

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	78.8	(30.0 - 115.)
Nitrobenzene-d5	M610	78.9	(23.0 - 120.)
p-Terphenyl-d14	M610	86.5	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	99.2	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	85.6	(63.4 - 136.)
Toluene-d8	BTEX-8260	82.0	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	99.2	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	85.6	(63.4 - 136.)
Toluene-d8	NAP-8260	82.0	(72.1 - 137.)

M = Method

Method-Description

M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

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SC	10120	10512
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 1 of 2

Sample ID : SPORT0625-6
Lab ID : 9803508-06
Matrix : Soil
Date Collected : 03/20/98
Date Received : 03/20/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0141	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	166	332	ug/kg	1.0	JPA	03/25/98	0315	118787	2
Acenaphthylene	U	0.00	166	332	ug/kg	1.0					
Anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	166	332	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	166	332	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Chrysene	U	0.00	166	332	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	166	332	ug/kg	1.0					
Fluoranthene	U	0.00	166	332	ug/kg	1.0					
Fluorene	U	0.00	166	332	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	166	332	ug/kg	1.0					
Naphthalene	U	0.00	166	332	ug/kg	1.0					
Phenanthrene	U	0.00	166	332	ug/kg	1.0					
Pyrene	U	0.00	166	332	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

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SC	10120	10582
TN	02934	02934

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Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 2 of 2

Sample ID : SPORT0625-6

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	79.0	(30.0 - 115.)
Nitrobenzene-d5	M610	80.9	(23.0 - 120.)
p-Terphenyl-d14	M610	85.5	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	86.6	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	87.6	(63.4 - 136.)
Toluene-d8	BTEX-8260	85.2	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.6	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	87.6	(63.4 - 136.)
Toluene-d8	NAP-8260	85.2	(72.1 - 137.)

M = Method

Method-Description

M1	EPA 8260
M2	EPA 8270
M3	EPA 3550

Notes:

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Karen Blakeney

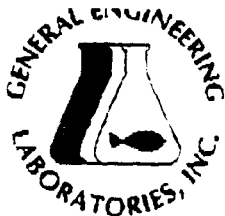
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SC	10120	10382
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 1 of 2

Sample ID : SPORT0625-7
Lab ID : 9803508-07
Matrix : Soil
Date Collected : 03/20/98
Date Received : 03/20/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0212	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	JPA	03/25/98	0347	118787	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

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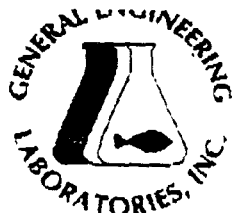
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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
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North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: March 31, 1998

Page 2 of 2

Sample ID : SPORT0625-7

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	80.2	(30.0 - 115.)
Nitrobenzene-d5	M610	82.2	(23.0 - 120.)
p-Terphenyl-d14	M610	87.1	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	86.8	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	89.4	(63.4 - 136.)
Toluene-d8	BTEX-8260	84.4	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.8	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	89.4	(63.4 - 136.)
Toluene-d8	NAP-8260	84.4	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

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ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Karen Blakeney
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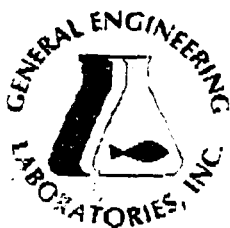


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STATE	QEL	EPI
FL	E87156/87294	E87472/87453
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 02, 1998

Page 1 of 2

Sample ID : SPORT0628-1
Lab ID : 9803607-01
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

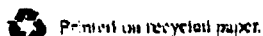
Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0243	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	BTEX-8260	86.4	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	88.0	(63.4 - 136.)
Toluene-d8	BTEX-8260	86.0	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.4	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	88.0	(63.4 - 136.)
Toluene-d8	NAP-8260	86.0	(72.1 - 137.)

M = Method	Method-Description
M1	EPA 8260

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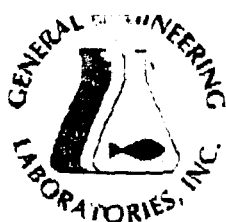


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SC	10120	10582
TN	02934	025

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 02, 1998

Page 2 of 2

Sample ID : SPORT0628-1

M = Method

Method-Description

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

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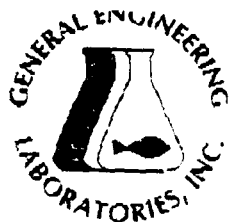
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FL	E87156/87294	087472/87458
NC	232	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-2
Lab ID : 9803607-02
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0314	119097	1
Ethylbenzene	U	0.565	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	J	2.49	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.765	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	TSD	03/30/98	1745	118976	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

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SC	10120	10982
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 2 of 2

Sample ID : SPORT0628-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	84.3	(30.0 - 115.)
Nitrobenzene-d5	M610	67.7	(23.0 - 120.)
p-Terphenyl-d14	M610	86.5	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	84.8	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	86.4	(63.4 - 136.)
Toluene-d8	BTEX-8260	84.0	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	84.8	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	86.4	(63.4 - 136.)
Toluene-d8	NAP-8260	84.0	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

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FL	887156/W7294	ES7472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-3
Lab ID : 9803607-03
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0345	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	TSD	03/30/98	1815	118976	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiets

Project Description: SUPSHIP-Portsmouth Detachment

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Report Date: April 03, 1998

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Sample ID		SPORT0628-3	
Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	70.3	(30.0 - 115.)
Nitrobenzene-d5	M610	70.8	(21.0 - 120.)
p-Terphenyl-d14	M610	82.3	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	87.4	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	84.4	(63.4 - 136.)
Toluene-d8	BTEX-8260	84.2	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	87.4	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	84.4	(63.4 - 136.)
Toluene-d8	NAP-8260	84.2	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Karen Blakeney
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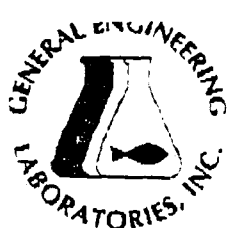


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STATE	GEL	MP
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-4
Lab ID : 9803607-04
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/30/98	1739	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	TSD	03/30/98	1845	118976	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

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NC	233	
SC	10120	10382
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 2 of 2

Sample ID		SPORT0628-4	
Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	61.3	(30.0 - 115.)
Nitrobenzene-d5	M610	57.5	(23.0 - 120.)
p-Terphenyl-d14	M610	64.7	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	84.2	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	87.2	(63.4 - 136.)
Toluene-d8	BTEX-8260	83.0	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	84.2	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	87.2	(63.4 - 136.)
Toluene-d8	NAP-8260	83.0	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
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standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

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FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-5
Lab ID : 9803607-05
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	03/28/98	0448	119097	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	TSD	03/30/98	1914	118976	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

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STATE	QEL	EPI
FL	ES7156/87294	ES7472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

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Sample ID		SPORT0628-5	
Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	63.2	(30.0 - 115.)
Nitrobenzene-d5	M610	64.7	(23.0 - 120.)
p-Terphenyl-d14	M610	68.7	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	86.4	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	88.2	(63.4 - 136.)
Toluene-d8	BTEX-8260	85.0	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.4	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	88.2	(63.4 - 136.)
Toluene-d8	NAP-8260	85.0	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakency at (803) 769-7386.

Karen Blakency
Reviewed By

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9803607-05

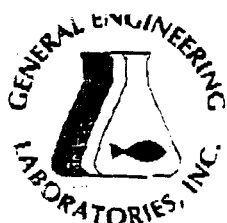


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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	231	
SC	10120	10582
TN	02734	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-6
Lab ID : 9803607-06
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	662	1320	ug/kg	4.0	TSD	03/30/98	1944	118976	1
Acenaphthylene	U	0.00	662	1320	ug/kg	4.0					
Anthracene	U	0.00	662	1320	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	662	1320	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	662	1320	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	662	1320	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	662	1320	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	662	1320	ug/kg	4.0					
Chrysene	U	0.00	662	1320	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	662	1320	ug/kg	4.0					
Fluoranthene	U	0.00	662	1320	ug/kg	4.0					
Fluorene	U	0.00	662	1320	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	662	1320	ug/kg	4.0					
Naphthalene	U	0.00	662	1320	ug/kg	4.0					
Phenanthrene	U	0.00	662	1320	ug/kg	4.0					
Pyrene	U	0.00	662	1320	ug/kg	4.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

RDH 03/26/98 1315 118976 2

Comments:

A dilution was required for Extractable Organics due to matrix interference. As a result, the detection limits are elevated.

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Laboratory Cert #

STATE	GEL	EI
FL	ES7156/8729	ES7156
NC	232	
SC	10120	100
TN	02934	0.4

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 2 of 2

Sample ID : SPORT0628-6

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	82.9	(30.0 - 115.)
Nitrobenzene-d5	M610	60.3	(23.0 - 120.)
p-Terphenyl-d14	M610	86.2	(37.3 - 128.)

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
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Laboratory Certifications

STATE	COL	EPI
FL	5K7156/97294	EE7472/87434
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-7
Lab ID : 9803607-07
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	664	1330	ug/kg	4.0	TSD	03/30/98	2014	118976	1
Acenaphthylene	U	0.00	664	1330	ug/kg	4.0					
Anthracene	U	0.00	664	1330	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	664	1330	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	664	1330	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	664	1330	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	664	1330	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	664	1330	ug/kg	4.0					
Chrysene	U	0.00	664	1330	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	664	1330	ug/kg	4.0					
Fluoranthene	U	0.00	664	1330	ug/kg	4.0					
Fluorene	U	0.00	664	1330	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	664	1330	ug/kg	4.0					
Naphthalene	U	0.00	664	1330	ug/kg	4.0					
Phenanthrene	U	0.00	664	1330	ug/kg	4.0					
Pyrene	U	0.00	664	1330	ug/kg	4.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

RDH 03/26/98 1315 118976 2

Comments:

A dilution was required for Extractable Organics due to matrix interference. As a result, the detection limits are elevated.

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Laboratory Certifications

STATE	QEL	EPI
FL	R87156/R7294	ER7472/R7458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 2 of 2

Sample ID : SPORT0528-7

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	83.9	(30.0 - 115.)
Nitrobenzene-d5	M610	59.4	(23.0 - 120.)
p-Terphenyl-d14	M610	94.4	(37.3 - 128.)

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-8
Lab ID : 9803607-08
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	666	1330	ug/kg	4.0	TSD	03/30/98	2044	118976	1
Acenaphthylene	U	0.00	666	1330	ug/kg	4.0					
Anthracene	U	0.00	666	1330	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	666	1330	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	666	1330	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	666	1330	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	666	1330	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	666	1330	ug/kg	4.0					
Chrysene	U	0.00	666	1330	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	666	1330	ug/kg	4.0					
Fluoranthene	U	0.00	666	1330	ug/kg	4.0					
Fluorene	U	0.00	666	1330	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	666	1330	ug/kg	4.0					
Naphthalene	U	0.00	666	1330	ug/kg	4.0					
Phenanthrene	U	0.00	666	1330	ug/kg	4.0					
Pyrene	U	0.00	666	1330	ug/kg	4.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

RDH 03/26/98 1315 118976 2

Comments:

A dilution was required for Extractable Organics due to matrix interference. As a result, the detection limits are elevated.

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STATE	GEL	UP
FL	E67156/87294	11874 2/8 50
NC	223	
SC	10120	1050
TN	02934	0290

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 2 of 2

Sample ID		: SPORT0628-8	
Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	88.5	(30.0 - 115.)
Nitrobenzene-d5	M610	68.2	(23.0 - 120.)
p-Terphenyl-d14	M610	97.0	(37.3 - 128.)

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
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STATE GEL EPT
FL 887156/87294 E87472/87458
NC 233
SC 10120 10582
TN 02934 02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 1 of 2

Sample ID : SPORT0628-9
Lab ID : 9803607-09
Matrix : Soil
Date Collected : 03/23/98
Date Received : 03/25/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	166	332	ug/kg	1.0	TSD	04/03/98	1102	118976	1
Acenaphthylene	U	0.00	166	332	ug/kg	1.0					
Anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	166	332	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	166	332	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Chrysene	U	0.00	166	332	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	166	332	ug/kg	1.0					
Fluoranthene	U	0.00	166	332	ug/kg	1.0					
Fluorene	U	0.00	166	332	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	166	332	ug/kg	1.0					
Naphthalene	U	0.00	166	332	ug/kg	1.0					
Phenanthrene	U	0.00	166	332	ug/kg	1.0					
Pyrene	U	0.00	166	332	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

RDH 03/26/98 1315 118976 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	76.3	(30.0 - 115.)
Nitrobenzene-d5	M610	55.1	(23.0 - 120.)
p-Terphenyl-d14	M610	77.8	(37.3 - 128.)

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Laboratory Certificate

STATE	GEL	EXP.
FL	EB716/87294	5/31/98
NC	233	
SC	10120	10/92
TN	02934	02/93

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 03, 1998

Page 2 of 2

Sample ID		SPORT0628-9	
Surrogate Recovery	Test	Percent%	Acceptable Limits
<hr/>			
M = Method		Method-Description	
M 1		EPA 8270	
M 2		EPA 3550	

Notes:

The qualifiers in this report are defined as follows:

ND Indicates that the analyte was not detected at a concentration greater than the detection limit.

• Indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

• Indicates that the analyte was not detected at a concentration greater than the detection limit.

• Indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Reviewed By

Karen Blakeney

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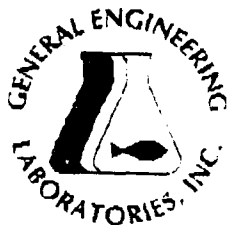
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White = sample collector Yellow = file Pink = with report



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Laboratory Certifications

STATE	GEL	EPI
FL	ES7156/87294	ES7472/8745N
NC	232	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SLPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SLPSHIP-Portsmouth Detachment

cc: NPWCC0197

Report Date: April 14, 1998

Page 1 of 2

Sample ID : SPORT0649-1
Lab ID : 9804197-01
Matrix : Soil
Date Collected : 04/08/98
Date Received : 04/08/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	04/09/98	2037	119824	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	J	1.16	1.00	4.00	ug/kg	1.0					
Naphthalene		5.74	1.00	2.00	ug/kg	1.0					

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	BTEX-8260	87.8	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	85.8	(63.4 - 136.)
Toluene-d8	BTEX-8260	87.2	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	87.8	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	85.8	(63.4 - 136.)
Toluene-d8	NAP-8260	87.2	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260

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Laboratory Certifications

STATE	GEL	EPI
FL	EE1156/87294	EE7472/87455
NC	233	
SC	10120	10582
TN	02934	02934

Client: Superior Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2105
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 14, 1998

Page 2 of 2

Sample ID: SPORT0649-1

M = Method

Method Description

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Karen Blakeney

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9804197-01

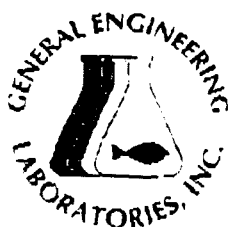


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Laboratory Certifications

STATE	GEL	EPI
FL	097156/87294	E87472/8745R
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 14, 1998

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Sample ID	: SPORT0649-2
Lab ID	: 9804197-02
Matrix	: Soil
Date Collected	: 04/08/98
Date Received	: 04/08/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	04/09/98	2108	119824	1
Ethylbenzene	U	0.519	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	164	330	ug/kg	1.0	RLC	04/10/98	1512	119814	2
Acenaphthylene	U	0.00	164	330	ug/kg	1.0					
Anthracene	U	0.00	164	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	164	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	164	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	164	330	ug/kg	1.0					
Benzo(g,h,i)perylene	U	0.00	164	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	164	330	ug/kg	1.0					
Chrysene	U	0.00	164	330	ug/kg	1.0					
Dibenz(a,h)anthracene	U	0.00	164	330	ug/kg	1.0					
Fluoranthene	U	0.00	164	330	ug/kg	1.0					
Fluorene	U	0.00	164	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	164	330	ug/kg	1.0					
Naphthalene	U	0.00	164	330	ug/kg	1.0					
Phenanthrene	U	0.00	164	330	ug/kg	1.0					
Pyrene	U	0.00	164	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

HDB 04/09/98 1600 119814 3

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(803) 556-8171 • Fax (803) 766-1178

9804197-02



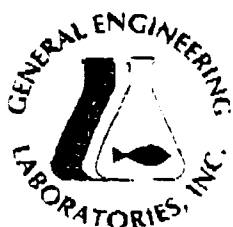
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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02534	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: April 14, 1998

Page 2 of 2

Sample ID : SPOR70649-2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	75.7	(30.0 - 115.)
Nitrobenzene-d5	M610	40.1	(23.0 - 120.)
p-Terphenyl-d14	M610	78.6	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	86.2	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	86.6	(63.4 - 136.)
Toluene-d8	BTEX-8260	87.0	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	86.2	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	86.6	(63.4 - 136.)
Toluene-d8	NAP-8260	87.0	(72.1 - 137.)

M = Method

Method-Description

M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney

Reviewed By

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